



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/895,881	06/29/2001	Brad E. Paden	2673.2.1	5381

21552 7590 01/24/2003

MADSON & METCALF
GATEWAY TOWER WEST
SUITE 900
15 WEST SOUTH TEMPLE
SALT LAKE CITY, UT 84101

EXAMINER

SMITH, TYRONE W

ART UNIT PAPER NUMBER

2837

DATE MAILED: 01/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/895,881

Applicant(s)

PADEN ET AL.

Examiner

Tyrone W Smith

Art Unit

2837

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-67 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-67 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 and 5. 6) ☐ Other: ____

DETAILED ACTION

1. Claim 60 objected to under 37 CFR 1.75 as being a substantial duplicate of claim 18.

When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

3. Claims 1-5, 18-19, 32-34, 43-44, 50-52, 58, 60 and 67 rejected under 35 U.S.C. 102(e) as being anticipated by Barada et al (6404088).

Regarding Claims 1, 19, 33, 50 and 67. Barada discloses a Magnetic Bearing Device, which includes a pair of positional displacement (Figure 2 item(s) 5-8) sensors to produce a displacement output (column 6 lines 15-16), an offset correcting means (Figure 3 item 19) and sensor gain adjuster (Figure 3 item 20) for producing an offset corrected signal from the positional displacement sensors and for adjusting the displacement output to account for a

sensor offset (column 6 lines 33-35), position compensating means (Figure 2 item 13) for compensating for the offset corrected signal from the offset correcting means (column 6 lines 36-38), a control means (Figure 2 item 15) for converting the adjusted displacement output to a force for positioning the movable body and an actuator/driver (Figure 1 item 14) for positioning the movable body with force to a point of substantial axial equilibrium (column 6 lines 40-56). Refer to abstract; column 2 lines 23-67, column 3 lines 1-40, column 4 lines 1-67 and column 5 lines 1-65; Figure(s) 3-5.

Regarding Claims 2-5, 18, 32, 34, 43-44, 52 and 60. Barada discloses converting the adjustment output to a force, inputting the adjustment output into a position controller/ control means (Figure 2 item 15; column 4 lines 12-40) and driver (Figure 1 item 14; column 4 lines 12-40) to determine the point of axial equilibrium (column 5 lines 21-52). Further, adjusting the displacement output to account for the sensor offset for estimating the sensor offset and adjusting the displacement output by the estimated sensor offset (column 4 lines 54-67 and column 5 lines 1-3). Barada discloses the system as a control feedback system for reset and continuous operation (Figure 2A items Ss1 and S2)

Regarding Claims 58. Barada discloses the control means (Figure 2 item 15; column 4 lines 12-40) controls the driver (Figure 1 item 14; column 4 lines 12-40) to successively energize the electromagnets to move the object along the auxiliary supports (column 4 lines 1-41-53), detecting maximum and minimum values of the detected positional replacement signal, which is stored in the position compensating means (Figure 2 item 13; column 4 lines 54-67 and column 5 lines 1-3), from the positional displacement sensors. Further, calculating a middle value between a maximum value and minimum values and comparing the middle values with a predetermine threshold (column 6 lines 43-67 and column 7 lines 1-3).

4. Claims 61-66 rejected under 35 U.S.C. 102(e) as being anticipated by Beamson et al (6394769). Beamson discloses a pump having magnetically suspended rotor with one active control axis which includes a housing with an inlet and outlet port for receiving and discharging fluid (abstract; Figure 1), a rotor or impeller positioned within the housing for pumping blood between the ports (abstract; Figure 3A item 20), a plurality of permanent magnets passively controlling the radial position of the rotor (column 5 lines 13-57; Figure 3A items 34, 36, 40 and 42), an electromagnet for actively controlling the position of the rotor in the axial direction (column 8 lines 61-64), a sensor for measuring the axial displacement of the rotor (column 8 lines 32-42; Figure 12 item 37), the VZP controller adjust (Figure 12 item 122) the output of the sensor (Figure 1 item 37) and positions the rotor at the point of substantial axial equilibrium and send a signal to the current amplifier/actuator (Figure 12 item 124) for driving the axial bearing (Figure 3A item 50). Refer to column 3 lines 32-63, column 4 lines 36-67, column 5 lines 1-67, column 8 lines 32-42, column 8 lines 52-67, and column 9 lines 1-64.

The applied reference has a common inventor(s) with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to

a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 6-17, 20-31, 35-42, 45-49, 53-57 and 59 rejected under 35 U.S.C. 103(a) as being unpatentable over Barada et al (6404088) in view of Ueyama (6215218).

Barada discloses a Magnetic Bearing Device, which includes a pair of positional displacement (Figure 2 item(s) 5-8) sensors to produce a displacement output (column 6 lines 15-16), an offset correcting means (Figure 3 item 19) and sensor gain adjuster (Figure 3 item 20) for producing an offset corrected signal from the positional displacement sensors and for adjusting the displacement output to account for a sensor offset (column 6 lines 33-35), position compensating means (Figure 2 item 13) for compensating for the offset corrected signal from the offset correcting means (column 6 lines 36-38), a control means (Figure 2 item 15) for converting the adjusted displacement output to a force for positioning the movable body and an actuator/driver (Figure 1 item 14) for positioning the movable body with force to a point of substantial axial equilibrium (column 6 lines 40-56). Barada discloses the control means (Figure 2 item 15; column 4 lines 12-40) controls the driver (Figure 1 item 14; column 4 lines 12-40) to successively energize the electromagnets to move the object along the auxiliary supports (column 4 lines 1-41-53), detecting maximum and minimum values of the detected positional replacement signal, which is stored in the position compensating means (Figure 2 item 13; column 4 lines 54-67 and column 5 lines 1-3), from the positional displacement sensors. Further, calculating a middle value between a maximum value and minimum values and comparing the middle values with a predetermine threshold (column 6 lines 43-67 and column 7 lines 1-3). However, Barada does not disclose a means for storing a plurality of displacement output and keeping the outputs in memory.

Ueyama discloses a control magnetic bearing system (Figure(s) 3, 4 and 6). The system includes a displacement detection section (Figure 3 item 9) with three (plurality) displacement sensors (Figure 9 item(s) 23-25, column 6 lines 41-45) and a controller (Figure 3 item 2; column 6 lines 31-55) with a DSP board (Figure 6 item 16; column 6 lines 31-55). Refer to Figure 6; a sensor circuit (Figure 6 item 13; column 8 lines 23-52) receives displacement output information from the displacement detection section. The DSP board stores displacement and other information for further use (column 7 lines 33-67 and column 8 lines 1-3).

It would have been obvious to one of ordinary skill in the art at the time in invention to combine Barada's invention of a Magnetic Bearing Device with Ueyama's control magnetic bearing system. The systems would provide a magnetic bearing control system capable of changing a control parameter according to the type of mechanical unit being used.

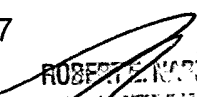
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tyrone W Smith whose telephone number is 703-306-5987. The examiner can normally be reached on weekdays from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Nappi, can be reached on (703) 308-3370. The fax phone number for the organization where this application or proceeding is assigned is 703-308-3431.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.

Tyrone Smith

Art Unit 2837


ROBERT E. NAPPI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600